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ABSTRACT

A school-based intervention, Changing Teacher Practice (CPT), was developed to teach school leaders, principals, and resource leaders what research has discovered to be effective teaching and effective staff development. CTP was designed to determine if research findings could be used to improve practice and whether practitioners in a school setting were receptive to knowledge derived from research procedures. A major concern was the effect of staff developers' behaviors upon teachers with whom they worked, and the effects of teachers' behaviors on pupil outcomes. The CTP study used research on teaching findings as content for a planned intervention. Research on teacher and school change was used as the basis for a delivery system for that content. These two bodies of information were combined into a specific change strategy which was introduced to staff development persons in an ongoing school setting and reinforced twice in that setting. The implementation of the CTP study demonstrated the possibilities (and problems) associated with attempting to introduce research findings into school and classroom settings through an intervention aimed at school leaders. (JD)

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CHANGING TEACHER PRACTICE
EXECUTIVE SUMMARY OF AN EXPERIMENTAL STUDY

Gary A. Griffin, Principal Investigator

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Report No. 9055

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INTRODUCTION

The study reported in this executive summary is rooted in several assumptions about educational research, the nature of schools as human organizations, and the delivery of professional growth opportunities to teachers. It is widely believed that research findings are not used as guides to school and classroom practice. Many reasons have been advanced for this condition such as the reluctance of researchers to communicate their findings to constituent groups other than their research colleagues, the rigidity of school persons in terms of reconceptualizing the role of teacher or the organization of schools, the "closed system" nature of many school settings, the lack of rewards for changing behavior, and so on (Tikunoff, Ward, & Griffin, 1981). In short, it appears that the link between the research findings and the potential users of those findings was not developed to any sufficient degree.

The present pilot study was an attempt to develop such a link. The following pages contain the executive summary of the final report of this effort to alter staff developer, teacher, and pupil behaviors. (The full description of the study is found in Griffin, Barnes, O'Neal, Edwards, Defino, & Hukill, Note 1.)

Purposes

This study used an intentional intervention with persons responsible for inservice training of teachers. The intervention, termed Changing Teacher Practice (CTP), was based upon the belief that the past two decades have seen an increase in the research-based knowledge about (1) effective teaching and (2) effective strategies for changing teachers and changing schools. The CTP study integrated these two bodies of research findings in

an intervention strategy aimed at causing effective staff developer behavior, effective teaching, and ultimately, positive pupil outcomes. Much of the material is more fully elaborated in earlier RITE publications (Barnes, Note 2; Edwards, Note 3; Griffin, Note 4, Note 5).

Briefly, the preliminary ideas for the CTP study might be put forth as follows. The findings from research on teaching have not found their way into classrooms. Likewise, the knowledge about how best to work with teachers and other school persons toward positive change has not been widely observed in practice. RITE proposed to consider these two bodies of research-derived information in terms of their potential for clinical inservice teacher education. The CTP study (1) used research on teaching findings as content for a planned intervention, (2) used research on teacher and school change as the basis for a delivery system for that content, (3) combined these two bodies of information into a specific change strategy, which was (4) introduced to staff development persons in an ongoing school setting and (5) reinforced twice in that setting. Participants were observed for treatment effects upon staff developer behavior, teacher behavior, and on-task student behavior. (On-task behavior was used as a proxy for student achievement. See Anderson, Evertson, & Brophy, 1979; Emmer, Evertson, & Anderson, 1980; Sanford & Evertson, 1981).

Problem

During the past years of intense and persistent attempts to introduce changes in the instructional programs of schools, it was discovered that after an initial flurry of activity, observations of practice illustrated Sarason's (1971) conclusion that "the more things change, the more they remain the same." With some variability in terms of effect, it can be noted that these past attempts at change were also less than optimal in their

impact upon teachers and teaching. In the case of changing teacher behavior, it was suggested that the match between and among teaching practice, content differences, and the general nature of schools was such that change was a formidable object of attention and it might best be left alone.

An alternate explanation to those which are noted above is a simple but powerful one. It can be hypothesized that the attempts to change did not take into account two critical factors: Teachers' desire and/or need to change and the existential phenomena of schools which must be manipulated in order for change to be seen as necessary and desirable from teachers' perspectives.

The content of teaching behavior requires a means for delivery. Many strategies for school and teacher change advanced during the past two decades did not take into account the critical school variables which appear to be directly related to the degree of success of innovations. This RITE intervention employs a means by which school, system, and classroom variables are manipulated such that change can take place and, ultimately, teachers can make the difference claimed by Good (Note 6).

Rationale

A set of research-based conclusions about school change guided this effort. These conclusions, more often than not, have emerged as a consequence of post hoc analyses of efforts to innovate in schools. Some have come about as a conscious attempt to study change as it occurs. What is relatively rare is a prescription for change which is carefully documented and systematically subjected to rigorous research in contrast to prescriptions for change which rest primarily at the level of proposition or sets of "ought" statements. A cautionary word is necessary, however. One

principal finding of change-oriented research is that attempts to change are often situation-specific (Berman & McLaughlin, 1978). That is, the contexts in which the change efforts take place vary widely and the variation appears to produce equally variable effects if the change strategy does not account for it. Therefore, the CTP intervention had as a deliberate component the opportunity for staff developers to select strategies and teaching behaviors that, after systematic reflection about situation-specific school variables, fitted their setting.

The intervention was implemented with the staff development persons such that (1) the conclusions from the change literature were consciously attended to, while at the same time (2) the persons charged with system staff development made the primary, situation-specific decisions about how to move forward with the change strategy.

The second point above is an important one. In contrast to some school improvement efforts, the CTP study did not prescribe what instructional leaders must do with their teachers. Instead, the strategy proposed a set of options for working with teachers and focused participants' attention on the need to make reasoned and rational selections from the set. Likewise, staff developers were not required to focus on any or all of the research-derived teaching behaviors but to select the ones that were most appropriate for the teachers with whom they worked.

The point of intervention for the CTP study was a critical issue. Because RITE was concerned about the replicability of the CTP study in settings other than the one in which the original research took place, it was believed that the most appropriate intervention point was at the staff developer level. That is, the content and the strategy would be introduced to persons charged with staff development who would be studied in terms of

their own behaviors and beliefs as well as their apparent effects upon the teachers with whom they worked. The CTP study was based on the assumption that school leaders can provide instructional leadership to faculty groups if they are helped to focus their behavior and if they have a knowledge base from which they can work.

THE RESEARCH BASE

Certain specific classroom teaching behaviors have been identified by research as being positively related to higher student scores on standardized mathematics and reading tests. Research has also indicated that student achievement is related to on-task behavior of students. These findings formed the content of the inservice training to be delivered by staff developers to the teachers. In addition, certain specific features have been identified by research studies as positively related to the facilitation of desired change in teacher practice. These features informed the system for delivery of the content. Taken together these two bodies of knowledge formed synergetic inservice training that was research-derived, theoretically sound, and conceptually coherent.

Research on Teaching

The teacher behaviors forming the content of the inservice training have been identified by the line of research generally referred to as "teacher effectiveness research" (Medley, 1980). In these studies teachers and students in a variety of settings were observed for periods of time and their behaviors recorded. From these observational records, teacher behaviors which related to student learning as measured by standardized tests were then identified. An operational definition of the effective teacher emerged from this line of research: The effective teacher is the teacher whose classes regularly score higher on standardized achievement

tests than do classes of other teachers after entering differences among classes are statistically controlled (Good & Grouws, 1977; Brophy & Evertson, Note 7; Good & Grouws, Note 8; Stallings, Needels, & Stayrook, Note 9).

Descriptions of Selected Studies

Three sets of major research efforts provide most of the findings selected for inclusion in the CTP intervention. The major topics of interest in one group of studies were management and organization of the classroom. The work of Brophy and Evertson (Note 7) on the Correlates of Effective Teaching Project began with correlational studies in the second and third grades. Other studies based upon their work eventually moved into other grades and subjects, including an experimental study in reading at the first grade level and a descriptive study in mathematics and English at the junior high level.

The second set of studies which began with the work of Good and Grouws (1977, 1979, Note 8) on the Missouri Mathematics Effectiveness Project were correlational studies of teachers and students in third and fourth grade mathematics. Later, experimental studies based on these findings were conducted in sixth, eighth, and ninth grade mathematics. Major emphasis in these studies has been on systematic instruction.

This line of research began with the work of Stallings on the Follow Through evaluation of the Planned Variation programs. Data for the correlational study were collected for reading and mathematics in grades 1 and 3. These findings served as a basis for extending research into the teaching of basic reading skills in grades 7-12. Both a correlational study and an experimental study were conducted at this level. The emphasis in

these studies has been on a program of effective instruction in reading skills.

Other studies have contributed in some way to this synthesis of findings. The work on the Follow Through evaluation in Florida by Soar and Soar (1972) and the work by McDonald and Elias (e.g., Note 10) on the Beginning Teacher Evaluation Study contribute some important findings.

This research on teaching from large-scale, classroom- based studies provides a profile of only one definition of an "effective teacher," where effectiveness is measured by student outcomes on standardized tests. In addition, the profile is limited to areas of teaching which have recently received heavy research emphases: learning environment, management of behavior, classroom instruction, and teaching style. While it is recognized that these areas do not form a complete picture of teaching, the findings indicate that some teaching behaviors are associated with increased student achievement in mathematics and reading at the elementary school level. The effective teachers in these studies tended to establish a work-orientation in the classroom while maintaining a warm, supportive environment. They also were well-organized and emphasized management of the classroom in order to optimize the productive use of time. During class effective teachers stayed actively involved with students to prevent misbehavior and intervened promptly to stop misbehavior. When presenting new material effective teachers used a systematic instruction plan which included gaining students' attention before beginning the lesson, making a clear presentation, allowing students to practice new skills, monitoring and providing feedback, assigning individual seatwork, and evaluating students' responses. Effective teachers generally interacted with the whole class

during classtime and moved students through discussions at a brisk pace with a high level of student success.

These research findings support many common teaching practices and answer criticisms that educational research has no relationship to real classroom problems and situations. While there are other conceptions of good teaching which view teaching as an art or as a job requiring certain philosophical or psychological orientations, the CTP study was only concerned with recent findings in classroom-based research and not the assumptions underlying this particular approach to the study of teaching. At present if school emphasis is on achievement in basic skills as measured by standardized achievement tests, then this research provides teachers with behaviors that facilitate increases in achievement and still allow adaptation to fit particular classroom needs.

Research on the Process of Change

Given the stated teaching behaviors as the desired outcomes of a program of inservice training for teachers, the next logical step is the facilitation of change in teacher practice in the direction of greater incidence of the stated behaviors. An inservice teacher education program based on research findings regarding features of successful change efforts will be conducive to that facilitation.

There are, to be sure, problems inherent in the formulation and testing of a strategy to alter teachers' pedagogical practices. Good (Note 11), among others, acknowledges the context effect issue. Ward and Tikunoff (Note 12) identify problems related to "working on" rather than "working with" teachers. Griffin (1979) characterizes some of the issues of evaluating teacher change efforts.

Three widely and frequently cited research efforts provide extensive data regarding changing teacher practice: 1) the I/D/E/A five-year study of change in individual schools (Bentzen, 1974); 2) the Rand Corporation study of federal programs supporting educational change (Berman & McLaughlin, 1978); and, 3) the Concerns Based Adoption Model (CBAM) work on the implementation of innovations (Hall & Loucks, 1978). Particular emphasis has been placed upon Sarason's (1971) notion of institutional regularities, Goodlad and Klein's (1974) hypotheses regarding why change is blunted in schools, Bentzen's (1974) findings derived from the I/D/E/A study of school change, and Berman and McLaughlin's (1978) propositions about system characteristics which foster and support efforts to change. In addition, and related to the I/D/E/A findings and processes, potential strategies can be derived from organization development and practice.

Research on the process of change provides a description of various practices which have been found to be positively associated with the successful implementation of innovations. The descriptive listing is neither exhaustive nor absolute but is logically generalizable and predictable in terms of expected results.

From studies of school and teacher change it can be inferred that effective leadership will take into account (1) opportunities for teacher interactions focused on professional issues, (2) provision of technical assistance to teachers, (3) adaptation of ideas and programs toward a "fit" with school and classroom regularities, (4) opportunities for reflection, and (5) focused and precise (rather than general) attention on important school issues. These broad areas of leader behavior were more sharply defined in operational terms and presented as part of the CTP intervention

in the form of a list of desired staff developer behaviors. (See Appendix A.)

METHODS AND PROCEDURES

As already noted, the CTP study consisted of an intervention with staff developers to provide them with strategies and content to improve reading and mathematics instruction by elementary school teachers. To assess the impact of this intervention a treatment group-control group quasi-experimental design was used to test a set of related hypotheses.

Hypotheses

The following hypotheses examined the effects of the intervention.

Hypothesis 1

Treatment group staff developers will demonstrate more of the desired staff development behaviors than control group staff developers when doing inservice work with teachers.

Hypothesis 2

Treatment group teachers will exhibit higher frequencies of desired teacher behaviors than control group teachers.

Hypothesis 3

Between treatment and control groups of both staff developers and teachers, the frequencies of desired staff developer behavior will exhibit a correlation with desired teacher behavior.

Hypothesis 4

Treatment group students will exhibit greater on-task behavior as measured by the Student Engagement Rating protocol than control group students.

Site and Participant Description

Because RITE is part of a national research and development center, it is considered important that its research reflect, as much as possible, the realities of the nation's schools. In that a major national educational issue is the multi-cultural nature of the school population, the CTP study was implemented in a school system which reflected multi-cultural student and educator populations.

School improvement is not the sole responsibility of any one agency in the educational community. Teachers, administrators, higher education persons, and researchers come together to better understand the ways and means of schooling. Therefore, the RITE study was conducted in a school setting where there was an active set of professional associations (teacher organizations, administrator organizations, etc.) and some link between the school system and other institutions with similar purposes (e.g., colleges/universities).

The school system also had a demonstrated history of attending to the issue of school improvement. Although we believed the study described here had promise to bring about changes at several levels of the school organization, the RITE staff was aware of the necessity that any change effort be placed in what might be called a "receptive" environment. This meant that the school policies and institutional climate were amenable to change and to reflection.

The persons who agreed to participate in the study, especially staff developers, had some flexibility in terms of the use of their time and in terms of their assignments. This flexibility was part of the agreement between RITE and the officers of the participating school system.

It was also desirable that the staff development activities in the participating system take place at the individual building level. This feature corresponded to several of the tenets of school change strategies and, as well, provided the research team with a more economical way to accomplish the logistics of data collection.

Finally, and most importantly, system personnel at staff developer and teacher levels agreed to participate in the study. This agreement was supported by policy level persons in the school system and in the professional associations.

A representative group of ten individuals who were responsible for working with teachers in an effort to promote more effective teaching and school improvement in the selected district were identified. Each was assigned to one group of five, matched as closely as possible according to role, SES of school, prior experience, years in the position, and reputation for effectiveness. One of each pair was randomly assigned to the treatment or control condition at the staff developer level.

Two teachers from among the group with whom each staff developer worked were selected by staff developers. Those ten teachers working with the staff developer treatment group constituted the teacher treatment group, the other ten constituted the teacher control group.

Students of the treatment group teachers constituted the treatment group students. Students of control group teachers constituted the control group students.

Similarities within and across the various role groups participating in the study appeared to outnumber observed differences. The staff developers in both treatment and control groups were over 30 years of age; all but one had a Masters' degree (and that exception was nearing completion of a

Masters'). Each group of staff developers consisted of three resource teachers and two school principals; all but one in each group were school-based. All staff developers had prior classroom teaching experience at the elementary level. The treatment and control group teachers showed similarities as well. For both groups, most were Anglo women, and at least half the teachers in each group had Masters' degrees. Roughly half the teachers in each group were in primary classrooms, and about half in each group belonged to professional associations. Seven teachers in each group reported working in medium-sized schools. Also, the teachers responded in like manner (no statistically significant differences) to the open-ended questionnaires about their teaching abilities and the abilities of their students.

Design

Because RITE was concerned with the effects of the staff developer behavior upon teachers with whom they worked and with the effects of the teacher behavior upon pupil outcomes, the independent-dependent variable relationship was conceptualized as shown in Figure 1.

Figure 1. RITE Changing Teacher Practice Research Design.

Independent Variable	Dependent Variable	Independent Variable	Dependent Variable
RITE Staff Developer Treatment	Staff Developer Behavior	Teacher Behavior	Pupil On-Task Behavior
	Independent Variable	Dependent Variable	

The RITE staff expected change in staff developer behavior (dependent variable) and, further, as a consequence of staff developer behavior (now considered an independent variable) teachers were expected to behave in

certain ways (dependent variable). Likewise, RITE expected teacher behavior (now an independent variable) to affect pupil outcomes (dependent variable).

Intervention

This study was concerned with the effects of staff developer behaviors upon teachers with whom they work and with the effects of teacher behaviors upon pupil outcomes. In order to increase their skills, staff developers were given one week of intensive training which focused on findings from research on effective teaching practice, and on the process of teacher and school change. The following section briefly describes each day of the training week.

Day 1. Participants were provided with the following materials:

1. Edwards, S. Changing teacher practice: A synthesis of relevant research (R & D Report 9008). Austin, TX: The University of Texas, Research and Development Center for Teacher Education, 1981.
2. Good, T.L. Classroom research: What we know and what we need to know (R & D Report 9018). Austin, TX: The University of Texas, Research and Development Center for Teacher Education, 1982.
3. Barnes, S.G. Synthesis of selected research on teaching findings (R & D Report 9009). Austin, TX: The University of Texas, Research and Development Center for Teacher Education, 1981.
4. Good, T.L., & Grouws, D.A., Beckerman, T., Ebmeier, H., Flatt, L., & Schneeberger, S. Teachers Manual: Missouri Mathematics Effectiveness Project (NIE-G-770003). Columbia, MO: University of Missouri, September, 1977.
5. Barnes, S. Observer training manual for the Changing Teacher Practice study (Revised manual, R & D Report 9050). Austin, TX:

The University of Texas, Research and Development Center for Teacher Education, 1983.

6. Information for Participants
7. Journal Guidelines
8. Selections from "Useful Research for Staff Development: An Eclectic Approach," a paper prepared by G. A. Griffin for the Title I Seminar for the Central States, Austin, Texas, January, 1982.
9. Information dealing with the Concerns-Based Adoption Model (CBAM) and Stages of Concern (SoC) to be presented on Day 3.
10. Daily Agendas for the first three days of the training week
11. Changing Teacher Practice Workbook
12. Desired Teaching Behaviors
13. Desired Staff Developer Behaviors
14. Vouchers for participants in the study
15. Evertson, C., Emmer, E., Clements, B., Sanford, J., Worsham, M., & Williams, E. Organizing and managing the elementary school classroom (R & D Report 6060). Austin, TX: The University of Texas at Austin, The Research and Development Center for Teacher Education, 1981.

The first day consisted of sharing a list of research based desired teaching behaviors, and training staff developers to recognize these behaviors in classroom settings.

Participants were then asked to identify these behaviors in two narrative transcriptions of actual classroom settings and in two videotapes of teachers in the process of instruction. Discussions and clarifications followed each practice session.

Day 2. The second day of the intervention was devoted solely to how staff developers might serve as change agents in their respective schools.

Findings were shared from studies related to the facilitation of change in teacher practice. Three general areas related to desired staff development behaviors were addressed: (1) mutual adaptation; (2) organizational development; and, (3) support networks. For planning, learning, observing, and descriptive purposes, a list of specific staff developer behaviors, derived from the research literature related to teacher change, was provided for the staff developers.

Participants were asked to list materials they might need to facilitate change in teachers' behaviors or simply to carry out the staff development of their teachers in the best way possible. The participants were asked to be sensitive to possible rules, regulations, and/or situations that might impede their work with teachers.

The final hour of the second day of training was devoted to an implementation activity and a questionnaire that pertained to the third day of training. For the implementation activities, participants were asked to combine their knowledge of desired teacher behaviors and desired staff developer behaviors and respond to a "Changing Teacher Practice Workbook."

Day 3. A researcher who is expert in the use of the Concerns-Based Adoption Model (CBAM) was responsible for the third day of training.

The CBAM researcher helped the participants to (1) understand the process of change, (2) correctly diagnose individuals' Stages of Concern (SoC) and Levels of Use (LoU) of innovations, and (3) plan for effective interventions to bring about desired change.

Day 4 and 5. The fourth and fifth day of training were devoted to planning for site implementation. Participants again worked toward

completing their Changing Teacher Practice Workbooks. RITE staff was available for guidance, advice and/or interaction.

Instruments

Staff developers' journals of interactions with participating teachers. Staff developers were asked to keep a written account of each staff development interaction with participating teachers. They were asked to include, as a minimum, information about the type of interaction, the content, and outcomes.

Participating teachers' journals of interactions with staff developers. Participating teachers were also asked to keep a written account of each interaction with their staff developer.

Barnes Teacher Observation Instrument (BTOI). The Barnes Teacher Observation Instrument (see Appendix B), was used by RITE staff members and other trained observers to observe classroom teachers for evidence of the desired teaching behaviors. These observations focused on several categories of teaching behaviors: planning and preparation, presentation of content, interactions, conducting practice, conducting seatwork, holding students responsible for assignments, organizing the classroom, presentation of rules or procedures, holding students responsible for behavior, and reacting to student behavior. The record of observed teacher behaviors documents the frequency of desired behaviors, as well as the naturally-occurring sequences of these behaviors.

Demographic questionnaire. This two-page structured questionnaire consisted of 16 items. The first three items pertained to the participants' personal characteristics: sex, age bracket, and ethnicity. Remaining items requested information about (1) the respondents' professional background, (2)

current professional status/job title, and (3) the settings in which the respondents worked, both previously and at present.

Student Engagement Ratings (SER). To provide a "snap-shot" of classroom activity during the observations, observers recorded information at 10 minute intervals on the student engagement rating form. That information included (1) the format of the class at the time, (2) the number of adults in the classroom, (3) the subject matter, (4) the total number of pupils in the room, (5) the number of students engaged in academics, procedures, or off-task behavior, and (6) a rating of apparent student success.

Teacher questionnaire. A teacher questionnaire was administered to teachers at the beginning of the school year. This questionnaire (1) provided evidence of teachers' plans for the beginning of school, determined teachers' confidence in their ability to teach their assigned students and curriculum, and (2) tapped their thoughts regarding their students' ability to learn.

FINDINGS

Hypothesis 1

> Treatment group staff developers will demonstrate more of the desired staff development behaviors than control group staff developers when doing inservice work with teachers.

Treatment group staff developers demonstrated slightly more than twice as many of the desired staff developer behaviors than did the control group. The results of a Mann-Whitney test indicate that this difference is statistically significant at the .01 level. The within group means were also in favor of the treatment group in that the highest mean for the control group was lower than the lowest mean for the treatment group.

The frequencies of each of the desired staff developer behaviors provide the substance of the difference between the group means. The strongest differences in favor of the treatment group (there were no instances of frequencies that favored the control group) were for diagnosing school- and classroom-specific regularities, providing teachers with opportunities to interact with one another about teaching and schooling, providing teachers with opportunities to plan together, providing teachers with feedback that is objective, concrete, and focused, adapting staff development behavior according to personal and organizational characteristics of "users," demonstrating knowledge of effective teaching as revealed by research, working with teachers on adaptation of teaching strategies, linking teachers to technical assistance outside the immediate school, including the building principal or resource teacher in teacher inservice activities, reflecting on effects of one's own behavior, and focusing on teacher behavior.

That these behaviors account largely for the difference between the treatment and control group staff developers is of interest because they are, in great measure, characterized by (1) attention to the school as an organization, (2) reconsideration of the so-called isolation of teachers from other teachers and administrators, (3) recognition of the need to adapt behavior and expectations according to observed school conditions, and (4) promotion of interactions within and outside the school environment. Taken together, the behaviors are ones that break down the perceived inadequacies of schools and school people to act together toward organizational goals.

Hypothesis 2

Treatment group teachers will exhibit higher frequencies of desired teacher behaviors than control group teachers.

In the categories dealing with academics, the treatment teachers exhibited higher mean rates in "Planning and Preparation," "Presentation," and "Holding Students Responsible for Assignments." Planning and preparation for academics was seen twice as often in the classrooms of treatment teachers as in the classrooms of control teachers ($p < .09$). For academic presentation, teachers in the treatment group again exhibited a statistically higher mean ($p < .01$). Although treatment group teachers had higher mean rates for holding students responsible for assignments, the differences were not statistically significant. Control group teachers produced higher mean rates for "Interactions," "Practice," and "Seatwork;" however, none of the differences were statistically significant.

A more consistent pattern was seen in the four observation categories related to classroom management. In each of these categories, the treatment group teachers displayed the higher mean rates. For two categories, "Holds Students Responsible for Behavior" and "Reactions to Students Behavior," the differences were slight. For the remaining categories, "Organizes Classroom" and "Presentation of Rules and Procedures," the differences were statistically significant ($p < .03$ and $p < .06$, respectively).

In some observation categories, "Planning and Preparation for Academics" ($p < .06$), "Practice" ($p < .04$), and "Seatwork" ($p < .04$) significantly higher or lower rates of teacher behaviors were associated with particular staff developers. In other words, individual staff developers had significant effects upon the pairs of teachers with whom they worked. In some categories, "Interactions" ($p < .003$), "Seatwork" ($p < .08$), and "Holding Students Responsible for Assignments" ($p < .08$) the mean rates of teaching behaviors increased significantly over time ($p < .001$) for both

treatment and control groups. Mean rates for presenting rules and procedures decreased significantly over time, as would be expected.

The hypothesis was accepted for certain categories of teaching (planning and preparation for academics, academic presentation, organizing the classroom, and presentation of rules and procedures) but was rejected for others (interactions, practice, seatwork, holding students responsible for assignments, hold students responsible for behavior, teacher reactions to students' behavior).

Hypothesis 3

> Between treatment and control groups of both staff developers and teachers, the frequencies of desired staff developer behavior will exhibit a logical relation with desired teacher behavior.

It was noted in the discussion of Hypothesis 1 that treatment group staff developers reported using significantly more of the desired staff development behaviors than did control group members. This difference was accounted for largely by a subset of 11 of the 23 behaviors. In the discussion of effective teaching behaviors, Hypothesis 2, it was reported that treatment group teachers demonstrated significantly more of the research-derived behaviors in certain categories than did control group teachers. Other categories of teaching behaviors were not significantly different in favor of either the treatment or control group.

Examination of the findings from Hypotheses 1 and 2 suggest that there <u>is</u> a relationship between effective leadership behavior and teaching. This relationship is not clear cut and is not readily understood, given the methods and procedures used in this study. What seems to have happened with the treatment group staff developers is that they used the relatively

unconventional leadership behaviors (e.g., adaptation of their own behaviors according to their teachers, provision of technical assistance outside the school, providing teachers opportunities for interacting and planning together, etc.) and focused those behaviors on teaching. The finding that there was such a dramatic difference between treatment and control staff developers in terms of focusing on teaching supports the possibility that the CTP study provided school leaders with a body of knowledge about classroom life that was coherent, organized and, one suspects, meaningful to teachers.

Hypothesis 4

> Higher percentages of treatment group students will exhibit greater on-task behavior as measured by the Student Engagement Rating (SER) protocol.

Higher percentages of treatment group students were on-task in academic activities, and higher percentages of control groups students were on-task in procedural activities. In neither case were these differences statistically significant. Both treatment and control group students did exhibit significant increases in their percentage of on-task academic behavior over time ($p < .03$) and significant decreases in their percentage of on-task procedural behaviors over time ($p < .04$). However, because of the nonsignificant differences between the percentages of treatment and control group students engaged in on-task behaviors, the research hypothesis could not be accepted.

DISCUSSION

There are several ways that these findings can be understood, if not explained fully. Among them are perspectives about (1) the setting and the participants, (2) the conventions of schooling, and (3) the conventions of teaching.

The Setting and The Participants

Earlier in this executive summary it was noted that the RITE research team deliberately selected a school district that was characterized by complexity, reflective of problems and issues faced by large numbers of other districts, and with a history of concerted effort in staff development and school improvement.

The district is large, covering the spectrum of SES characteristics, and has a recent history of making vigorous attempts to respond to the problems that arise from providing equal educational opportunity to a very heterogeneous population. Some schools in the district are new and architecturally pleasing, others are old and in various states of disrepair. There is a massive bussing program and a wide variety of special programs of both organizational and academic natures.

Of particular importance to the CTP study was the district's recent several-year history of attempts to increase student achievement as measured by standardized achievement tests. Among the strategies used to accomplish this objective were systematic attention to increasing student time-on-task, providing teachers with information about how to decrease classroom distractions, and the introduction of a carefully designed curriculum in reading and mathematics. These district-wide efforts were important because, in effect, they were focused on many of the same dimensions of schooling as was the CTP strategy. That is, they zeroed in on the importance of pupil instructional time and the relation of teacher behavior to that time. This was particularly true of the curriculum packages that used much of the teaching research as bases for what students and teachers were directed to do during reading and mathematics instruction. The teachers who used the

curricula were allowed little flexibility in that decisions about lesson plans, materials of instruction, testing, and grouping were made for them.

Consequently, in more than half of the schools and classrooms in the CTP study, equally divided between treatment and control groups, there was already in place a massive effort to increase student achievement through the use of research findings and curricula based, in large measure, on those findings. In research terms, it might be said that the district program was Treatment A and the CTP study was Treatment B.

It is possible that some of the findings of the CTP study can be understood in terms of these setting characteristics. The partial effects at the teacher level may be an artifact of the concerted effort that had already made an impact upon participating teachers. If this is the case, the effects that were achieved through the CTP intervention can be considered even more positively.

The significant effects at the staff developer level are also partially understood as a consequence of knowing about the setting. Although there had been concerted effort aimed at teachers, there had been less systematic attention given to research-derived leadership strategies. This was particularly true of principals who participated in their own inservice activities but, according to participant reports, these activities were more organizational and procedural than substantive. It was less true of resource teachers in the study in that these persons were participants in the development and use of the curricula noted above. The resource teachers were experts in the curricula but were not necessarily given help in the most effective ways to guide teachers in their use of those curricula.

It was noted that the participants in the study, staff developers and teachers in both treatment and control groups, were, for the most part,

experienced, well-educated, and highly regarded professionals. The district takes pride in the caliber of its staff and has a history of rewarding excellence. It is possible that the participants, much like the setting, are less typical of conventional school districts than was originally suspected.

The nature of the setting and the characteristics of the participants, then, worked for and against testing the power of the CTP strategy. On the one hand, there were setting variables (e.g., the history of attention to teaching research) and participant characteristics (e.g., the number of advanced degrees held by teachers) that may have mitigated against strong effects. On the other hand, the lack of systematic district attention to what research can tell the instructional leader or the notions inherent in "teaching" classroom rules and procedures probably increased the potential of the strategy for illustrating differences between treatment and control group participants.

The Conventions of Schooling

It is axiomatic that school people "take care of business." The ways in which this is done have been described in some detail and the pictures that emerge from the descriptions are of more similarity than difference across school sites. The persistent rhetoric about how instruction can be influenced by school leaders is, to many observers, more hollow than not.

Research into effective schools and the school change process, however, have identified "outlier" school leaders, persons whose leadership behavior is identified with positive change, good climate, a sense of professionalism, and student accomplishment. Examination of the research and proposition regarding school leadership suggests the possibility that, to a certain extent, the "effective" instructional leader is someone who pushes back against the conventions of schooling, someone who reconceptualizes the

organizational and management structure of schools and uses that reconceptualization as a means to make change happen.

The CTP intervention was most effective in terms of causing staff developers to act differently than might be expected if business as usual were carried forward. That is, the greatest differences between treatment and control group staff developers were largely linked to those leadership behaviors that are not conventional ones. Providing teachers opportunities to work together and plan together mitigates against the isolation of teachers from one another and may recreate a shared sense of mission. Understanding what makes his/her school and teachers different from other schools and other teachers may have suggested more powerful inservice activities. Consideration of how one's own behavior, and the behavior of teachers, must be modified to adapt to the demands of schooling may have increased sensitivity to the problems of change. Recognizing the available and pertinent resources inside and outside of the school (human and technical) may have provided a broader picture of what can be accomplished in classrooms. And, reflecting on one's own work in terms of effects, rather than only in terms of whether an activity was completed, may have provided stimuli for redirection of effort.

There were, however, certain research-based leadership strategies that were not accomplished as a consequence of the CTP intervention. These, too, can be understood in terms of the conventions of schooling. For the participants in this study, for example, providing technical assistance in the classroom did not take place to any large degree. There is little in the histories of schools to suggest that this is either easy or, in fact, feasible in terms of the ways that schools are conventionally organized. Similarly, diagnosing and acting upon teachers' concerns is a powerful

strategy that needs considerably more understanding and skill than the CTP strategy was able to accomplish. Further, the organization of schools and the dailiness of school activity probably mitigates against the concerted effort and time needed to use concerns theory systematically or thoroughly.

As was true in the discussion of the findings in relation to the study's setting and participants, the conventions of schooling may account for the success of the strategy in that some of the staff developer strategies, although not typical of school programs, were possible to effect. Others, however, may have been so dramatically unconventional that they required more system accommodation than the CTP intervention could induce.

The Conventions of Teaching

It is sometimes forgotten that the research-based effective teaching behaviors were, for the most part, invented by teachers. That is, teachers engage in certain practices that researchers discover to be consistently related to some positive student outcome, most often achievement gain on standardized tests. The CTP study was an attempt to bring together these research-based effective teaching behaviors such that staff developers could use them as the content of their work with teachers. Because the teaching behaviors are, in the main, neither exotic nor inconsistent with conventional classroom activity except in terms of focus or emphasis, it is not surprising that there were statistically significant effects for some groupings of behaviors and not for others.

The intervention used with the staff developers affected the teaching behaviors of the treatment group teachers in the desired direction, in some cases significantly. The greatest differences in teaching effects were seen in two important components of the teaching process, planning and presenting. These differences were seen whether the content of that teaching process was

academic or whether it was rules and procedures for classroom activity. The differences for planning are probably tied closely to one particular intervention resource, A Manual for Organizing the Elementary School Classroom (Evertson et al., Note 13). Following suggestions made in the manual would logically result in the posted rules or academic schedules seen in classrooms of treatment group teachers. Use of the manual would also account for the increased rates for presenting rules and procedures as the content of a "lesson," an idea that may be foreign to many teachers.

The increased rates for academic presentation are more difficult to account for, and according to some research (Good & Grouws, Note 9) more difficult to accomplish. Two ideas should be considered. An intervention resource was the Teacher Manual: Missouri Mathematics Effective Project (Good et al., Note 14) which stressed the development of the conceptual ideas of the lesson through teacher presentation. One could conclude that the manual achieved its purpose in the RITE study by increasing the presentation behaviors of the treatment teachers. Good and Grouws, however, expressed some concern with their success in enhancing the development portion of mathematics lessons with the teachers in their own study. The key here is one of quality versus quantity. Good and Grouws were interested in the quality of teacher presentation skills (clarity, for example) while the RITE study was concerned with the quantity or frequencies of certain teaching behaviors. It may have been easier to simply increase frequencies of behaviors in a teacher's repertoire in the RITE study than to increase the variety of "effective" teaching behaviors in the Missouri Mathematics Project.

The conventions of teaching also help to understand other findings in the CTP study. Significant content differences, for example, appeared to be

logically related to common practice (i.e., more practice, seatwork, and presentation in mathematics) or to be the result of observer coding decisions (i.e., coding round robin reading as interactions related to product questions). Likewise, the persistence of seatwork as a classroom activity probably precluded any systematic difference between treatment and control group teachers. It is unlikely, then, that some of the research-based teaching behaviors would be new to the setting or to the participants. In light of the discussion of the school district's attention to research on teaching in recent years, a statistically significant difference for all teaching behaviors in the study between treatment and control groups would be even more surprising.

Returning to the notion that teachers invented the effective behaviors and researchers found them to be effective according to a criterion, it is encouraging that certain groups of teaching behaviors were statistically significant in favor of the treatment group. There is little in the setting to suggest that influences other than the CTP intervention caused the differences.

IMPLICATIONS

As with understanding the findings, there are several ways that the CTP study can be viewed in terms of implications for the improvement of school practice. The two that will be discussed here are implications for (1) research into practice and (2) local capacity building.

Research into Practice Implications

There has been considerable talk and some activity around the topic of the so-called "gap" between research and practice. It has been assumed that the reduction of the ideological and temporal distances between what research discovers and what practitioners do are almost insurmountable. The CTP

study, a deliberate attempt to bridge the gap, resulted in a set of desired outcomes that suggest that practitioners will use the results of research. Several implications can be drawn from the implementation of the CTP intervention.

First, practitioners in this study were neither disdainful of nor resistant to lessons learned from systematic inquiry. One can speculate that the reasons for their positive responses to the CTP intervention were based largely on the fact that the research that was presented was directly related to practice and, in almost every instance, was "commonsensical" in terms of practitioners' views of their world.

Second, the research provided a focus for doing the work of classrooms and schools. It provided conceptualizations of instructional leadership and teaching that were coherent and that could serve as rallying points around which to organize practice. Although there is an obvious public emphasis on somehow improving schools, there is a less obvious response from either the research or practitioner community regarding how to go about that improvement. The CTP intervention seemed to provide bases for improvement activity, a welcome resource for school persons.

Third, the research was translated from the sometimes painful jargon of the research community into the more conventional language of schools. This translation was accomplished in some instances in print by the resource materials provided to participants and in others interpersonally by the RITE research team during the intervention. Although the study did not specifically address this issue, participant self-reports at the conclusion of the study testified to its importance in their decisions to adopt the strategy in schools and classrooms.

Fourth, the CTP strategy was conceptually and practically linked to ongoing processes and expectations in the school setting. As discussed earlier, the school district had in place activities and statements of purpose that were ideologically and theoretically aligned with the intentions of the CTP intervention at system, school, and classroom levels. As with other speculations in this section, it can be surmised that this alignment was a significant system variable contributing to the overall success of the CTP strategy.

Fifth, the CTP strategy was not a set of prescriptions for action. That is, participants were not required to engage in certain practices. Rather, participants were expected to analyze their own situations, using a relatively rationalistic set of procedures and data sources, and then make decisions and act upon their analyses. This is in marked contrast to improvement strategies that demand fidelity to a set of ideas or practices. The CTP strategy's demand was to consider and act upon the perceived match between school/classroom characteristics and a set of research-based options for leadership and teaching practice.

In sum, the implications of the implementation of the CTP strategy in terms of research into practice suggest that similar interventions will be positively viewed and acted upon when research is seen as directly related to the problems and issues in the setting, is relatively familiar to participants in terms of practical activity, is understandable conceptually and linguistically, and can be subjected to adaptation depending upon the character of the setting.

Local Capacity-Building Implications

The CTP study was, of course, an attempt to strengthen the role of research findings as guides to ongoing leadership and instructional

practices. The design of the study was such that another purpose could be served, that of increasing local school district capacity to improve classroom activity. Although there are many entry points into schools for improvement purposes, the CTP strategy elected to make its primary impact at the school leader level so that influence on the participating district could be deep and wide. This is in contrast to a strategy, for example, that would work with individual or groups of teachers. The CTP strategy was constructed on the assumption that staff developers work with large numbers of teachers who, in turn, work with large numbers of students. If the strategy was effective, it could (1) reach more people than might be possible or feasible when working only with teachers and (2) the effects would increase the capacity of the district to do school improvement because of the enhanced knowledge and skills of its leadership cadre. As was noted earlier in this report, it is possible that the CTP intervention provided school leaders with a "technical core," a body of knowledge and skill required for a cohesive and successful organization. Further, the CTP strategy's design of staff developer-teacher linkage acted upon the phenomenon that has been called "loose coupling" (Williams, in Defino & Carter, Note 15). School systems have been criticized because their organizational components are not tightly joined to serve common missions. In the CTP strategy, two organizational components, leadership and teaching, were tightly coupled through systematic attention to what research has shown to be effective teaching.

It has been shown that the strategy was largely successful in accomplishing the goal of increasing the frequencies of certain leadership behaviors used by staff developers. The implications of this for practice are obvious. The behaviors are not specific to the content of the CTP intervention. They can be used in both maintenance and improvement

activities. They can be used for a wide variety of purposes within the school organization. They are economical in terms of material resources. There is no magic involved. And, because they are carried by people rather than equipment or technology, they can be transferred from one place in the system to another.

CONCLUSION

The implementation of the CTP study demonstrated the possibilities (and the problems) associated with attempting to introduce research findings into school and classroom settings through an intervention aimed at school leaders. The study accomplished many of its goals and fell somewhat short of others. The reasons for both accomplishments and shortfalls are as complex as are the schools and classrooms that were the ultimate targets of the strategy. The intervention was a research success, although the success was not as dramatic as might have been desired. At the same time, it must be acknowledged that the ambitions of the study were large ones.

This report has centered, quite naturally, on the effects of the CTP intervention in research terms. The effects in more practice-related ways provide a somewhat different chronicle.

The participating school district officers were enthusiastic about the CTP strategy from the beginning. There was a high level of excitement about the possibilities before, during, and after the intervention and subsequent data collection. Participant response from treatment group members was consistently positive. Importantly, participants testified that other staff developers in the district should have the same opportunity they had been provided.

When the study was completed and the findings were available, the district adopted the CTP intervention for 175 elementary and middle school

principals and resource teachers. Part of the adoption decision was made on the basis of research. That is, the findings of the CTP study were positive enough to suggest the usefulness of the strategy for district purposes. A large part of the decision, however, appears to have been made on more practical grounds. The RITE research team suspects that the commonsense approach to doing leadership and doing teaching was compelling to district officials. Also, the cost effectiveness of the strategy, in terms of financial resources, was undoubtedly attractive. And, the probable generalizability of the leadership behaviors to school improvement purposes other than teaching was a factor.

When the CTP research was completed, the RITE research team returned to the study site, demonstrated the intervention, modified somewhat to fit current district needs and schedules, and local persons were selected to carry it forward. These persons had been members of the original treatment group staff developers and were sensitive to, knowledgeable about, and skillful in the content and processes of the intervention. Since the final analyses of the data presented in this report, the intervention has been presented to more than 100 principals and resource teachers, in groups of 10 to 15, and the principals and resource teachers have worked with more than 3000 teachers. This was accomplished in a five-month period.

In the document that proposed the CTP study to the National Institute of Education, the following statement appeared:

> The story goes that George Washington Carver once prayed to understand the secrets of the universe. Despairing of an answer to so comprehensive a request, he modified his desire for understanding to the more modest dimensions of the peanut, thereafter contributing to scientific and economic advancement and successfully solving the problem of slippage in the jelly sandwich.
>
> Similarly, having despaired of understanding the secrets of producing effective teachers who will induce students to become persons of all

> accomplishments and virtues, [RITE has] settled for understanding some processes by which most elementary teachers can be helped to teach most elementary students to demonstrate higher levels of skill in mathematics and reading.

As can be seen from the content of this report, that modest statement itself subsumed an ambitious purpose. The study, however, has demonstrated the possibility of accomplishing large parts of the purpose and has provided the groundwork for better understanding of the research into practice phenomenon.

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APPENDIX A

Research-Based Effective Leadership Behaviors

1. diagnose school- and classroom-specific regularities
2. provide teachers with opportunities to interact with one another about teaching and schooling
3. provide teachers with opportunities to plan together
4. provide teachers with opportunities to implement their plans
5. use teacher time to deal with teacher problems, issues, and concerns (rather than with administrative, routine, or procedural matters)
6. engage teachers in problem identification and solution formulation and testing activities
7. provide teachers with opportunities to observe one another and to discuss what was observed
8. provide teachers with feedback which is objective, concrete, and focused
9. interact with teachers in friendly and positive ways
10. adapt staff development behavior according to personal and organizational characteristics of "users"
11. work with teachers on adaptation of teaching strategies according to the characteristics of students, the classroom, and the school
12. demonstrate knowledge of "effective" teaching as revealed by research
13. provide teachers with evidence that "teachers can make a difference" in pupil outcomes
14. provide in-classroom technical assistance (e.g., coaching) to teachers
15. provide teachers with specific, concrete resources
16. link teachers to technical assistance outside the immediate school environment
17. communicate expectations clearly and precisely
18. diagnose individual stages of concern of teachers
19. formulate interventions based, in part, on teachers' stages of concern
20. provide consistent, ongoing assistance to teachers

21. include the building principal or resource teacher in activities

22. reflect upon the effects of his/her behavior and use that reflection as a basis for decisions about maintenance or modification of that behavior

23. focus on teacher behavior

Barnes Teacher Observation Instrument

APPENDIX B

A. Planning and preparation
1. t. allocates time per academics
2. t. posts assignments for day
3. t. posts assignments for week
4. t. provides calendar w/ass'mts

B. Presentation
1. t. gives/seeks rationale for lesson
2. t. presents new info. or content
3. t. refers to previous lesson content
4. t. uses materials
   a. kinds
   b. supply
   c. corrections made
5. t. divides complex tasks into steps
6. t. gives demonstration
7. t. uses concrete examples
8. t. makes comparisons
9. t. points out patterns
10. t. uses ex. related to Ss interests
11. t. gives directions
12. t. relates new activity to previous or future activity

C. Interactions
1. t. asks questions where Ss provide "the" answer (Product ques.)
   a. correct
   b. incorrect
   c. no answer
2. t. asks questions where Ss provide "how" and "why" (Process ques.)
   a. correct
   b. incorrect
   c. no answer
3. t. calls on Ss
   a. non-volunteers
   b. in predetermined pattern
   c. accepts callouts
   d. volunteers - hands up
4. t. waits for Ss to respond to ques.
5. t. explains "how" or "why" the ans. was obtained (process explanation)
6. t. accepts academic comments by Ss during lesson
7. t. accepts content questions during lesson
8. t. accepts procedure questions during lesson
9. t. answers content questions asked by Ss after instruction
10. t. answers procedure questions asked by Ss after direction-giving

D. Practice
1. t. conducts practice over new (or old) material in whole group
2. t. checks Ss responses for correctness
3. t. provides feedback
4. t. moves around classroom
5. t. reminds Ss that they should be working or participating
6. t. reminds Ss that work will be checked

E. Seatwork
1. t. watches class after making ass'mt
2. t. reacts to Ss not complying with assignment
3. t. circulates as Ss work
4. t. scans seatwork as Ss work
5. t. gives individuals assistance
6. t. assigns extra credit work to more able Ss
7. t. assigns work using higher cognitive levels (analysis or above)

F. Holds Ss responsible for ass'mts
1. t. makes daily homework ass'mts.
2. t. tells Ss their work will be checked
3. t. tells Ss they must complete ass'mt
4. t. makes ass'mts using procedure
5. t. has Ss record ass'mts in designated place
6. t. requires Ss to keep notebooks to store assignments
7. t. collects assignments daily
8. t. checks/grades papers
9. t. returns graded work to Ss
10. t. communicates make up work to Ss
11. t. relates Ss work to grades

G. Organizes classroom
1. t. allocates time to teach rules/procedures
2. t. states, posts, or write rules/procedures

H. Presentation of rules/procedures
1. t. provides/seeks a rationale for rules and procedures
2. t. communicates to Ss desired attitude
3. t. communicates to Ss desired behavior
4. t. introduces groups of rules and procedures at different times
5. t. explains rules and procedures in concrete terms
6. t. demonstrates rules & procedures
7. t. breaks complex r&p into steps
8. t. explains cues associated w/r&p
9. t. demonstrates cues
10. t. has Ss practice r&p
11. t. gives feedback on Ss performance
12. t. reteaches r&p
13. t. communicates consequences to Ss

I. Holds Ss responsible for behavior
1. t. observes Ss behavior
2. t. uses r&p for use of materials/areas
3. storing Ss possessions
4. using learning centers
5. Ss use of shared materials, cabinets
6. Ss use of T's desk and area
7. Ss use of drinking fountain/sink
8. Ss use of pencil sharpener
9. Ss use of bathrooms
10. Ss use of out-of-class bathrooms, drinking fountains, office, lib., resource room, health office
11. passing out books and supplies
12. telling Ss which materials to bring to groups
13. playground
14. lunchroom

t. uses r&p for discussion
15. S participation in class disc.
16. talk among Ss during academic presentation
17. talk among Ss during seatwork
18. talk among Ss during freetime

t. uses r&p for movement
19. Ss lining up to leave room
20. Ss coming and going to other areas of school
21. Ss movement into and out of groups
22. Ss leaving seats during academic presentation
23. Ss leaving seats during seatwork
24. Ss leaving seats during free time

t. uses r&p for assignments
25. Ss getting t. attention for help
26. Ss turning work
27. handing back assignments
28. Ss making up work
29. Ss activities after seatwork is finished

t. uses r&p for
30. selecting Ss for helpers
31. using Ss helpers
32. t. uses r&p for Ss conduct during interruptions and delays
33. t. uses r&p for cueing Ss attention

J. Reactions to Ss behavior
1. t. reacts to Ss not following r&p
2. t. reacts to Ss following r&p
3. t. uses consequences for inappropriate behavior
4. t. uses consequences for appropriate behavior
5. t. reacts to undesired attitudes
6. t. reacts to desired attitudes
7. t. uses consequences for undesired attitudes
8. t. uses consequences for desired attitudes

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